

## 5.5 Catch Basin Systems

### Technical Note

Existing catch basins are typically designed by qualified engineers to be positioned and sized according to a predetermined amount of water at a minimum flow rate. This is done in order to provide efficient removal of water from a roadway. Catch basin inserts containing filter media may have the potential, particularly in retrofit situations when not previously included in flow calculations, to slow water flow and reduce overall capacity. Therefore, it is recommended that, before retrofitting existing catch basins with filter media inserts, calculations be conducted with a qualified engineer or site designer to determine flow rates and capacity. This will allow for engineers to determine the impact of filter media inserts on the existing system and ensure continued efficiency.

In addition, some catch basin systems may not be appropriate in areas of NH where leaves and sand may be a problem for maintenance. The manufacturer should be contacted directly by the client to determine the feasibility of product use for specific site conditions.

### 5.5.1. AbTech Ultra-Urban™ Filters with OARS® Onboard

#### General Description

The Ultra-Urban Filter™ with OARS OnBoard®, developed and manufactured by AbTech Industries, is designed for use in catch basin systems to treat stormwater. The Ultra-Urban Filter comes in two series. The series CO1414 is made of corrugated plastic and has perforated cut-outs on each side of the module at the top. These cut-outs allow for the creation of a lateral overflow of stormwater to additional treatment systems or, during high flow situations, for stormwater bypass. The AbTech Ultra-Urban Filter Series DI2020 suspends from the drain into the catch basin through a structural plastic mounting collar and funnel mechanism.

#### Site Considerations

The Ultra-Urban Filter is designed for use in storm drains to capture oil, grease, trash, and sediment from stormwater runoff before it enters the storm drain system. Trash and sediment accumulate in the internal basket while oil and grease are captured in the filtration media. The Ultra-Urban Filter can be used in municipal, industrial, and construction applications.

The drainage area being served determines the number and configuration of AbTech Ultra-Urban Filter inserts. Flow rates through the filters exceed 70 gpm for the CO1414 and greater than 110 gpm for the DI202 series at installation. A typical curb-style storm drain has three to five modules per drain.

#### Installation

The series CO1414 can be installed in approximately one hour through a maintenance access of at least 24 inches in diameter. A single mounting bracket made of 16-gauge steel is required for the installation. The bracket can be attached to any vertical surface capable of supporting 250 pounds. The series DI2020 can be installed in less than five minutes. The DI2020 series should not be installed in drains where modules obstruct the drainpipe outlet. No pretreatment is required for Ultra-Urban Filter use.

## Maintenance

Ultra-Urban Filters should be serviced as needed to remove sediment and debris, according to expected debris accumulation. When necessary, the sediment and debris should be vacuumed out of the module using conventional maintenance equipment. Under normal operating conditions, the entire recyclable filter box should be replaced every 1-3 years.

## Aesthetics, Community and Safety

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

## Cost

Table 5.10 below indicates product pricing for the Ultra-Urban Filter. Please contact AbTech Industries for product pricing updates.

Table 5.10. AbTech Ultra-Urban Filter price list.

Product Number	Description	Dimensions (l x w x h)	Packaging Per Unit	MSRP (FOB Factory)
CO1414	Ultra-Urban Filter Curb Opening Module	13"x14"x23"	1 unit	\$250.00
CO1414H	Ultra-Urban Filter Curb Opening Module	13"x14"x13"	1 unit	\$250.00
CO1414FD	CO1414 Flow Diverter	Various	Linear feet	\$10.00/ft
CO1414BK	CO1414 Mounting Bracket	Various	Linear feet	\$10.00/ft
DI2020	Ultra-Urban Filter Drain Insert Module	19"x19"x20.75"	1 unit	\$590.00
DI2020H	Ultra-Urban Filter Drain Insert Module	20"x20"x13"	1 unit	\$590.00
DI2020FN	DI2020 Collar	Various	1 unit	\$100.00
DI1414	Ultra-Urban Filter Drain Insert Module	13"x14"x20.75"	1 unit	\$400.00
DI1414H	Ultra-Urban Filter Drain Insert Module	13"x14"x13"	1 unit	\$400.00
DI1414FN	DI1414 Collar (round)	26" diameter	1 unit	\$100.00
DI1420	Ultra-Urban Filter Drain Insert Module	14"x20"x20"	1 unit	\$450.00
DI1420H	Ultra-Urban Filter Drain Insert Module	14"x20"x13"	1 unit	\$450.00
UUF Mount	Ultra-Urban Filter Mounting Accessories	Various		Cost plus 50%
PC-55	Smart Sponge Popcorn	n/a	55 lbs/carton	\$600.00
PT-50	Smart Sponge Powder	n/a	50 lbs/carton	\$240.00

## Performance and Verification Ranking

Verification Ranking: 

Field tests have proven that the proprietary OARS Smart Sponge filtration media will remove up to 95% of the oil and grease in stormwater runoff in low flow situations. Oil is bonded within the Smart Sponge, which eliminates the possibility of leaching back into the environment.

Studies:

- *Field Test Results of the Ultra-Urban Filter Manufactured by AbTech Industries.* Astro Environmental, LLC. December 1999.

## Installation Contact

No existing New Hampshire installations to date. For contact information of installations outside of New Hampshire and for updates please contact AbTech Industries.

Additional Installations:

Wrentham Premium Outlet Center, Wrentham, MA  
Environmental Disposal Corporation, Bedminster, NJ  
Septic System Management, Belle Mead, NJ

**Manufacturer**

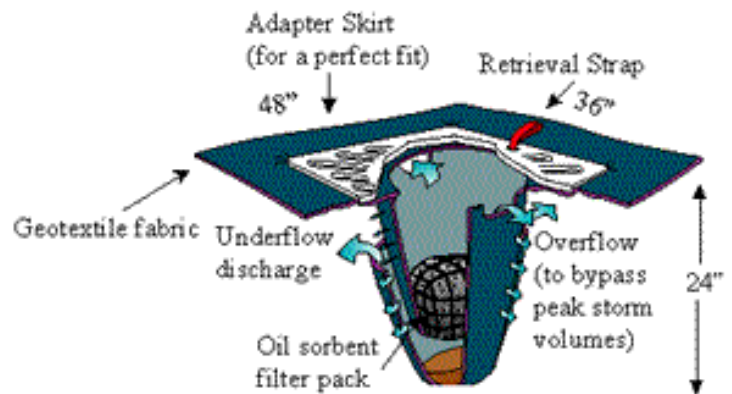
Company: AbTech Industries  
Address: 4110 North Scottsdale Road, Suite 235  
Scottsdale, AZ 85251  
Telephone: (480) 874-4000 or (800) 545-8999  
Fax: (480) 970-1665  
Email: [info@abtechindustries.com](mailto:info@abtechindustries.com)  
Website: [www.abtechindustries.com](http://www.abtechindustries.com)  
Contact: Don Thompson, Marketing Coordinator

### 5.5.2. StreamGuard™ Catch Basin Insert

#### General Description

The StreamGuard™ Catch basin Insert comes in three models: Model 3001 for oil and sediment removal, Model 3002 for trash and debris removal, and Model 3003 for sediment removal. The inserts' universal skirt adapter allows units to be installed in any size catch basin up to 30" x 40". The units are installed under storm drain grates and treat water through filtration, screening, gravity settling, and/or absorption.

When stormwater enters the catch basin, it is directed into the StreamGuard™ insert. The geotextile fabric first acts as a filter, allowing water to pass, but retaining target pollutants. When the fabric can no longer filter due to accumulated contaminants, it begins to operate in its designed long-term mode. In this mode, the body of the insert fills with water, providing detention for the gravity settling of sediment, which is captured in the bottom of the insert.



#### Site Considerations

The StreamGuard™ is designed to remove oil, grease, sediment, trash, and debris from stormwater runoff. Specific potential applications include:

**Model 3001: StreamGuard™ Insert for Oil and Sediment Removal**

- Parking lots
- Construction sites
- Marinas
- Industrial sites
- Vehicle washing facilities

**Model 3002: StreamGuard™ Insert for Trash and Debris Removal**

- Popular waterfront tourist areas
- Stadiums
- Street fairs
- Wood product facilities

**Model 3003: StreamGuard™ Insert for Sediment Removal**

- Construction sites

The StreamGuard™ Catch Basin Insert models are selected depending on target contaminants to specific site conditions. Table 5.11 summarizes the flow rates, overflow rates, and treatment flow rates for the StreamGuard™ system models.

**Model 3001: StreamGuard™ Insert for Oil and Sediment Removal**

- Contains a 1-pound granular polymer element, which can absorb up to two-thirds of a gallon of gasoline, diesel or other hydrocarbon.

**Model 3002: StreamGuard™ Insert for Trash and Debris Removal**

- Uses a screen bag designed to trap cigarette butts, candy wrappers, bottle caps, etc. It has an emergency overflow for high-storm events and may be emptied and reused.

**Model 3003: StreamGuard™ Insert for Sediment Removal**

- The geotextile fabric first acts as a filter, allowing water to pass, but retaining sediments.

Table 5.11. Total flow rate, overflow rate, and treatment flow rate of StreamGuard System models.

	Model 3001	Model 3002	Model 3003
Total flow rate capacity (new condition)	500 gpm	1000 gpm	500 gpm
Emergency overflow rate	250 gpm	250 gpm	250 gpm
Design treatment flow rate	≤ 20 gpm	≤ 40 gpm	≤ 20 gpm

**Installation**

To install the StreamGuard™ insert, remove the catch basin grating, lay the insert skirt over the opening, and replace the grate. Inserts are made of 100% non-woven polypropylene geotextile fabric. They will fit catch basins as small as 12" x 12" (12" diameter), and up to 30" x 40" (30" diameter). StreamGuard™ insert dimensions are 36" w x 48" l x 24" h, and can be installed in minutes. StreamGuard™ inserts are not recommended for curb-style drains or for any drains that consistently receive unusually heavy stormwater flows. No pretreatment is required for the StreamGuard™ system.

**Maintenance**

The manufacturer recommends monthly inspection of each insert installed as a Best Management Practice. Maintenance frequency will vary depending on the amount and type of pollutants present.

**Model 3001:**

- Maintenance may be required at 3- to 6-month intervals where moderate levels of hydrocarbons and sediments are encountered.

**Model 3002:**

- Where moderate levels of trash are encountered, weekly or monthly maintenance may be required. Maintenance consists of removing the unit, emptying the accumulated trash, and replacing the unit in the catch basin. At heavily littered sites, it may be advisable to inspect inserts after each significant storm event.

**Model 3003:**

- In applications where moderate levels of sediment are encountered, weekly or monthly maintenance may be required. Maintenance consists of removing the unit, emptying the accumulated sediment, and replacing the unit in the catch basin. On active construction sites, it may be advisable to inspect the inserts after each significant storm event.

The lifetime of the StreamGuard™ varies between models:

**Model 3001:**

- Replacement frequency for oil and sediment inserts depends on contaminant loading. In many applications with drainage areas equal to or less than 10,000 square feet, the inserts will operate as designed for 6 months or longer. In heavy-loading applications or poorly controlled sites, however, the inserts should be replaced on an as-needed basis.

Models 3002 and 3003:

- Trash and debris inserts and inserts for sediment control are typically replaced annually. However, wear and tear due to direct and frequent contact with vehicle tires will substantially reduce the unit's longevity.

**Aesthetics, Community and Safety**

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

**Costs**Model 3001 StreamGuard™ Insert for Oil and Sediment Removal

Recommended retail price for 1 unit is \$93.00; 10-pack inserts are \$820.00.

Model 3002 & 3003 StreamGuard™ Insert for Trash and Debris Removal

Recommended retail price for 1 unit is \$64.00; 10-pack inserts are \$560.00.

**Performance and Verification Ranking**

Verification Ranking: ●●●●

Studies:

Model 3001:

- *King County Surface Water Management Division of Washington State demonstrated oil removal efficiencies of 88% when tested in a park-and-ride lot catch basin. Catch basin inserts installed at SeaTac International Airport's passenger pick-up area show average removal efficiencies for Total Suspended Solids of 80%, and for oil & grease of 94%.*

**Installation Contact**

For contact information of StreamGuard™ installations and for updates please contact KriStar Enterprises, Inc. StreamGuard™ has installations in the following locations:

- New Hampshire DOT, Nashua, NH
- Three Oaks Development, Norwood, MA
- Exeter Energy Limited Partnership, Sterling, CT
- Consolidated Edison, New York, NY
- Reichold Chemical Company, Newark, NJ
- Community Bus Lines, Inc., Passaic, NJ
- US Coast Guard, Chesapeake, VA

**Manufacturer**

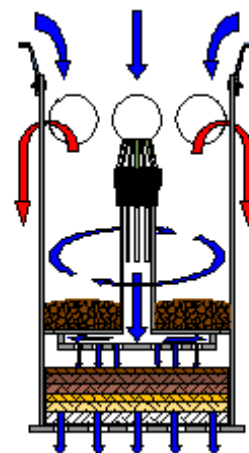
Company: Bowhead Manufacturing Company, LLC.  
 Address: P.O. Box 80327  
 Seattle, WA 98108  
 Telephone: (800) 909-3677  
 Fax: (888) 234-3677  
 Website: [www.bmccatalog.com/streamguard.html](http://www.bmccatalog.com/streamguard.html)  
 Email: [bmc@bowhead.com](mailto:bmc@bowhead.com)

### 5.5.3. Aqua-Guard™ Catchbasin Insert

#### General Description

The AquaGuard™ catch Basin Insert is designed to remove contaminants from stormwater runoff. Each AquaGuard™ insert includes a sediment collection/storage area and a patented cellulose fiber filter media contained in filter bags. The AquaGuard™ is available in various sizes and models and can be custom designed to fit most storm drains.

Flow enters the AquaGuard™ Catch Basin Insert at the sediment collection/storage area from above, capturing sediments, trash and debris. The pre-treated water travels down the center column and spreads across the filter media. The water is then filtered, removing dissolved oil, additional nutrients, and certain metals. Large flows that exceed the filter's capacity are allowed to escape through the overflow holes that are provided at the top of the insert.



#### Site Considerations

The AquaGuard™ is designed to remove coarse sediment, trash, and debris, and pollutants such as dissolved oil, nutrients and metals. As an element of a treatment train approach for stormwater pollution prevention plans, the AquaGuard™ Catch Basin Insert can be custom fit to any standard catch basin. Specific potential applications include:

- Roadways and parking lots
- Highway and transportation facilities
- Watershed protection
- Fast food restaurants

As the filter media reaches its flow capacity, water in the sediment chamber rises to the level of the overflow holes and exits the insert, reducing the possibility of flooding at the site. Table 5.12 summarizes the sediment and debris storage capacity and the amount of oil removal for each model.

Table 5.12. Sediment and debris storage capacity and oil removal for the AquaGuard™ system.

AquaShield Series	Sediment and Debris Storage (feet <sup>3</sup> )	Oil Removal (gallons)
AG-18	0.75	1.50
AG-24	1.4	3.00
AG-36	3.2	6.60
AG-48	6.6	13.80

#### Installation

The AquaGuard™ is fabricated using High-Density Polyethylene (HDPE) and stainless steel. The stainless steel support collar on the AquaGuard™ is custom sized to fit the catch basin frame. Installation involves removing the catch basin grate and lowering the AquaGuard into the catch basin. The flange of the stainless steel support collar will rest in the same lip that receives the catch basin grate.



The AquaGuard™ is available in a range of sizes. Table 5.13 summarizes the dimensions and size specifications of each model. No pretreatment is required for the AquaGuard™.

Table 5.13. AquaGuard dimensions and size specifications by model.

AquaShield Series	Surface Drain Opening Size	Discharge Pipe Dia. (inches)	Filter Body Dia. (inches)	Filter Unit Height (inches)	Filter Pillow Dia. (inches)
AG-18	18 – 24	6 – 12	14	23.5	12
AG-24	24 – 36	12 – 18	20	24.5	18
AG-36	36 – 48	18 – 24	30	28.5	27
AG-48	48 - 54	24 - 36	42	30.5	39

### Maintenance

Inspection is established for each site and maintenance is typically scheduled quarterly or after significant storm events. A routine inspection and maintenance program is established for each unit based on the volume or load of contaminants of concern, the frequency of releases of contaminants and the facility or location, and the nature of the area being drained. The maintenance routine includes the vacuuming of accumulated sediment and debris followed by inspection, replacement, or both of the filter media.

### Aesthetics, Community and Target Contaminants

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

### Cost

The AquaGuard system ranges in price from \$1500 to \$3500 per unit.

### Performance and Verification Ranking

Verification Ranking: **0**

To date AquaShield, Inc. for updates in performance studies.

### Installation Contact

No existing New Hampshire installations to date. For contact information of installations outside of New Hampshire and for updates please contact AquaShield, Inc.

### Manufacturer

Company: AquaShield, Inc  
 Address: 2733 Kanasita Drive, Suite A  
 Hixson, TN 37343  
 Telephone: (423) 870-8888 or (888) 344-9044  
 Fax: (423) 870-1055  
 Website: [www.aquasheildinc.com](http://www.aquasheildinc.com)  
 NE Contact: Gregg Novick  
 Email: [aquanovick@worldnet.att.net](mailto:aquanovick@worldnet.att.net)



## 5.5.4. DrainPac™

### General Description

The DrainPac™ is a storm drain catchment and filtration liner. It is available in four sizes, all equipped with a choice of two overflow systems, the hydraulic bypass and the uninhibited bypass. The DrainPac™ insert is made from a high-density polymeric support structure and is available in 3.0 oz., 8.0 oz, 12.0 oz, and 16.0 oz. non-woven or woven mesh. The base section of the insert is overlapped and welded for additional strength. The insert and filter media are supported by a custom-fit, metal mounting support frame made of stainless steel with a minimum thickness of 1/8”.

Each drain is outfitted with overflow protection, consisting of a bypass system that allows flow to be bypassed in heavy flow situations. Drain filters are available without overflow protection, and curb inlets are not equipped with overflow bypass.

### Site Considerations

The DrainPac™ insert is designed to filter pollutants, debris, and solids prior to discharge into storm drain systems. Specific potential applications include:

- Streets, commercial parking lots and shopping centers
- Construction erosion sites
- Outfalls
- Maintenance/ fueling facilities and automobile service stations

DrainPac™ personnel are available to work with clients to examine current stormwater designs in order to locate areas where DrainPac™ will be the most effective and have the greatest impact. Important factors to evaluate are the influent stormwater contents, the areas that drain to the selected catch basin, and whether there are specific flow rates. This evaluation is for the purpose of selecting the right the correct filter inlet media to install out of the six available. Tables 5.14 and 5.15 summarize the DrainPac™ filter liner and support structure specifications.

Table 5.14. DrainPac filter liner specifications.

Property (oz./sq.ft)	Water Flow Rate (gpm/sq.ft)	Thickness (ml)	Mullen Burst Strength (psi)	Micron Rating
3.5	140	50	200	400
8.0	110	85	360	220
12.0	90	120	640	125
16.0	50	150	750	95
Screen mesh 10.0 oz./sq.yd	N/A	30	360	11/11 ends/in. construction

Table 5.15. DrainPac support structure specifications.

Property	Value
Thickness (inches)	0.23
Strength Wall (lb/ft)	7,540
Strength Bottom (lb/ft)	15,080

## Installation

The DrainPac™ is available in four styles: Grate Top, Curb, and round configurations, as well as styles designed for outfall, or “end-of-the-pipe” applications, and drop-in drain applications. Each drain filter system includes all necessary hardware for complete installation and adequate spare hardware to accommodate each replacement bag filter. Installation includes, removing the drain cover, anchoring the flatbar and support basket following detailed manufacturer instructions, and inserting the filter bag, before replacing the drain cover. No pretreatment is required for the DrainPac™ system.

## Maintenance

A proper maintenance program is critical to ensuring that the flow through storm drain filter is uninhibited. The manufacturer recommends that all inspections take place prior to installation to determine areas of effectiveness. After installation, inspections are needed in order to establish maintenance schedules.

## Aesthetics, Community and Safety

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

## Cost

Because DrainPac™ typically designs for retrofit installations, they do not have pre-priced standard model options. Prices are normally quoted on an individual basis. Prices are determined using a formula incorporating the cubic feet of the catch basin. Contact manufacturer for additional cost details and quotes.

## Performance and Verification Ranking

Verification Ranking: **0**

Please contact PacTec, Inc. for updated performance information.

## Installation Contact

No existing New Hampshire installations to date. For contact information of installations outside of New Hampshire and for updates please contact PacTec, Inc.

DrainPac has been implemented in the following states:

Alabama	Georgia	Mississippi	Texas
Arkansas	Louisiana	Missouri	Washington
California	Michigan	North Carolina	
Florida	Massachusetts	Tennessee	

## Manufacturer

Company: PacTec, Incorporated  
 Telephone: (800) 272-2832 or (225) 683-8602  
 Fax: (225) 683-8711  
 Website: [www.drainpac.com](http://www.drainpac.com)  
 Email: [drainpacinfo@drainpac.com](mailto:drainpacinfo@drainpac.com)

### 5.5.5. Fossil Filter™

#### General Description

The Fossil Filter is a catch basin filtration system that uses a filter media to remove target contaminants from inlet runoff flows before draining into surface waters. It is adaptable to both new and retrofit construction. The Fossil Filter treats the first flush of stormwater runoff from a rain event and provides an overflow capability sufficient to prevent the system from being clogged. The sorbent filter media is a non-leaching inert blend of mineral that contains non-hazardous ingredients.



#### Site Considerations

The Fossil Filter removes and contains sediment, debris, trash, and petroleum hydrocarbons (oil and grease from fossil fuels) from stormwater runoff. In addition, some heavy metals attached to sediments are removed. Specific potential applications include:

- Areas subject to silt, debris, and hydrocarbons
- Parking lots, public streets
- Aircraft ramps
- Vehicle storage areas

The Fossil Filter™ can be used in a variety of project sites depending upon drainage area, contaminant loading, and other site conditions. Table 5.16 summarizes the Fossil Filter™ products and their recommended uses.

Table 5.16. Fossil Filter product descriptions and recommended uses.

Product Name	Product Description	Recommended Use
Flo-Guard Insert	Made of replaceable geotextile fabric. Collects silt, debris, petroleum hydrocarbons. Filtering device at low flow. High flow bypass	Areas subject to silt, debris, hydrocarbons. Parking lots, aircraft, ramps, vehicle storage areas, public streets
Flo-Guard High Capacity Catch Basin Insert	For new or retrofit construction. Square, rectangular, round. Collects and contains sediment, debris, hydrocarbons. High flow bypass.	Areas with higher than normal sediment & debris, and mod. high levels of hydrocarbons. Streets, equip. storage, maintenance yards
Perk Filter Insert	Converts catch basins into detention basins. Collects solids, silt & debris. Creates sump (detention) area above inlet and outlet pipes. Filters oil & grease. High flow bypass.	Areas with high silt, sediment & debris and moderately high levels of hydrocarbons.
Hydrocarbon Filter Insert	“Hard body” inserts to collect and contain hydrocarbons. Made of fiberglass, plastic, and stainless steel materials.	Areas with little or no silt or debris and higher levels of hydrocarbons. Parking lots, fueling areas.
Fossil Filter FB-2 Catch Basin	Complete drainage structure: fiberglass catch basin, hydrocarbon filter & grate. For areas where burial depth on the storm drainpipe does not allow for the installation of a standard filter insert. With or without a sump.	Well suited for gas stations, parking structures, or other areas where shallow piping is necessary.

## Installation

Installation of the filtration device does not require extensive modification of the catch basin. Installation contractors are licensed and insured in accordance with agency requirements. Filtration devices installed into grated or combination grate with curb opening inlets are self-supporting and installed without the use of anchoring devices.

Devices for curb inlets (no grate) have a removable filter basket that can be removed for maintenance without physically entering the drainage inlet. The device is secured into the inlet wall, across and beneath the curb opening, using corrosion resistant anchors. All anchoring devices are installed within the interior of the drainage inlet to avoid foot or vehicle traffic.

Filtration devices are installed in such a manner as to direct all flows into the device. Distance (gaps) between the inlet wall and device should not be more than one inch. Gaps of less than one inch should be sealed with a flexible weatherproof sealant.

No pretreatment is required for use of the Fossil Filter™

## Maintenance

The installed Fossil Filter requires periodic inspection and removal of all foreign objects (leaves, grass, paper, etc.). The area around the inlet should be swept on a regular basis. The installed Fossil Rock adsorbent should be inspected and replaced if the surface of the granules is more than 50% coated with contaminants or if the unit has become clogged with sediment. To ensure efficiency, it is recommended that, at a minimum, the units be inspected at least three times per year. In areas subject to excessive debris, the inspections should be more frequent.

Maintenance Plans are available through KriStar Fossil Filter. The Maintenance Plans are based on the filter's exposure to silt, sediment, debris, and petroleum hydrocarbon contaminants. The basic plan includes three inspections per year, per filter, and, based on exposure, up to three cleanings and up to three changes in filter medium. Custom plans can be developed for sites with higher contaminant loading. Each plan provides for proper handling and disposal of exposed adsorbent.

The maintenance cost is based on the number of inspections, cleanings and filter medium changes, the number of filters installed at the site, etc. An average cost for a typical three-visit maintenance plan is approximately \$200 per year or under \$70 per visit.

## Aesthetics, Community and Safety

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

## Cost

The Fossil Filter catch basin system costs approximately \$500.00 per unit depending upon the size of the existing basin. Replacement kits of Fossil Rock Filter medium for a 24" x 24" filter insert are approximately \$40.00.

## Performance and Verification Ranking

Verification Ranking: ●●●●

Testing of the Fossil Filter was conducted by the Sandine Engineering Associates of Santa Rosa, and the Eagle Engineering of Sacramento, California. Both showed that installed Fossil Filters did not impede maximum design flow of the inlet, and that the installed filter medium would effectively perform its filtering function with flows in excess of 12 gallons per minute per linear foot of filter surface. Field-testing on new Fossil Filters continues on a regular basis and has shown removal efficiencies of 85% for petroleum hydrocarbons and 90% for sediment of 400 microns or greater.

Studies:

- *Hydraulic Testing of Fossil Filter™*. Sandine Engineering. May 1995.
- *Laboratory Testing of Fossil Rock Adsorbent™*. Prism Laboratories. November 1995.

## Installation Contact

No existing New Hampshire installations to date. For contact information of installations outside of New Hampshire and for updates please contact KriStar Enterprises, Inc.

## Manufacturer

Company: KriStar Enterprises, Inc.  
Address: P.O. Box 7352  
Santa Rosa, CA 95407-0352  
Telephone: (800) 579-8819  
Fax: (707) 524-8186  
Email: [customercare@kristar.com](mailto:customercare@kristar.com)  
Website: [www.kristar.com](http://www.kristar.com)

### 5.5.6. Grate Inlet Skimmer Box

#### General Description

The Grate Inlet Skimmer Box is designed to pass incoming stormwater through the skimmer tray and come in contact with the hydrocarbon boom. The multi-stage filtration process captures pollutants, from hydrocarbons, grains of sand, grass clippings, and human trash. The deflection shield keeps the majority of the water turbulence adjacent to the filters, which prevents the escape of fine particles. The skimmer tray traps floatables and prevents them from floating through the overflow holes. If the stormwater flow exceeds the flow capacity of the lower and upper filters, water is allowed to exit through the overflow bi-pass. After the storm event has passed, the Grate Inlet Skimmer Box drains of all water and dries.

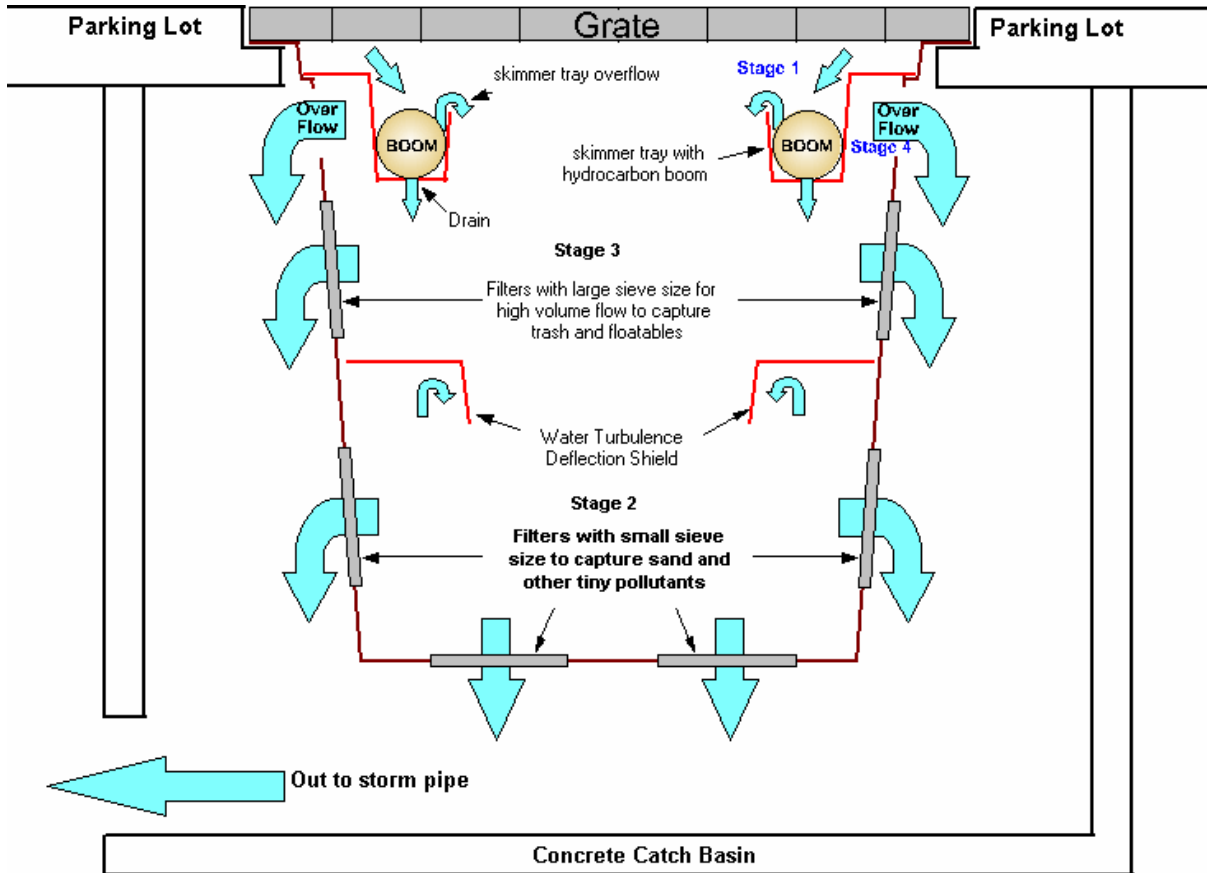


Figure 5.3. Suntree Technologies, Inc's Grate Inlet Skimmer Box schematic.

#### Site Considerations

The Grate Inlet Skimmer Box is designed to capture sediment, debris, trash, and hydrocarbons from stormwater runoff. Specific potential applications include:

- Public streets
- Parking lots
- Vehicle storage areas

The Grate Inlet Skimmer Box can be custom designed and shaped for retrofits. The design is dependent upon site conditions.

## Installation

Installation of the Grate Inlet Skimmer Box includes removing the grate, inserting the Skimmer Box, and replacing the grate. Professional installation is included with the purchase of the unit. Pretreatment is not required for use of the Grate Inlet Skimmer Box. Standard units come in the following sizes:

- 24" x 24"
- 25" x 25" up to 28" x 36"
- 29" x 37" up to 36" x 48"
- 37" x 49" up to 48" x 54"
- Larger sizes can be accommodated.

## Maintenance

Correct maintenance of any BMP is the only way to ensure efficiency and effectiveness. The Grate Inlet Skimmer Box must be routinely inspected and maintained to function properly.

The skimmer tray and deflection shield are a single unit, which can be removed for cleaning. Once the unit is removed, turn the filter box over and empty into a disposal container. Depending on the contaminant level at a given site, the hydrocarbon boom may need replacement. Maintenance Plan services are available for professional maintenance activities including, disposal of debris and replacement of the hydrocarbon boom.

## Aesthetics, Community and Safety

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

## Costs

Table 5.17 summarizes pricing of the Grate Inlet Skimmer Box. Please contact manufacturer for updates on current prices.

Table 5.17. Suntree Technologies, Inc's Grate Inlet Skimmer Box price list.

Flange Dimensions	Price Per Unit
Up to 24" x 24"	\$695.00
25" x 25" up to 28" x 36"	\$795.00
29" x 37" up to 36" x 48"	\$895.00
37" x 49" up to 48" x 54"	\$995.00
For larger sizes – call for quote	

## Performance and Verification Ranking

Verification Ranking: ●●●●

Efficiency testing has been conducted by Suntree Technologies, Inc. The maximum removal was 74% for suspended solids.

Studies:

- *Site Evaluation of Suntree Technologies, Inc. Grate Inlet Skimmer Boxes for Debris, Sediment, and Oil & Grease Removal.* Reedy Creek Improvement District Planning & Engineering Department, Environmental Services Laboratory. January 2000.



### Installation Contact

No existing New Hampshire locations to date. For contact information of installations outside of New Hampshire and for updates please contact KriStar Enterprises, Inc.

### Manufacturer

Company: Suntree Technologies, Inc.  
Address: 720 Mullet Road, Suite H  
Cape Canaveral, FL 32920  
Telephone: (321) 799-0001  
Fax: (321) 799-1245  
Website: [www.suntreetech.com](http://www.suntreetech.com)

### 5.5.7. Hydro-Kleen

#### General Description

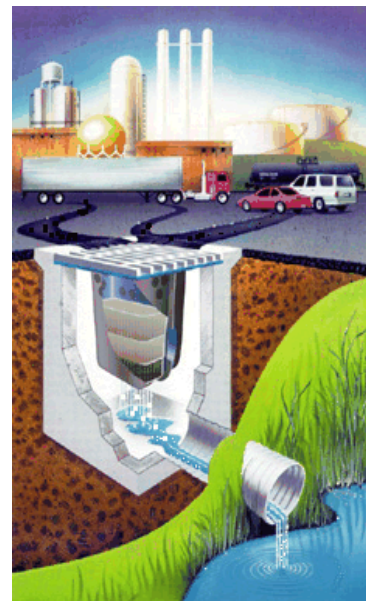
The Hydro-Kleen is a sedimentation and contamination filtration system that can be inserted into existing or new catch basin systems. Hydro-Kleen can work with internal or external sedimentation chambers and/or with other BMPs.

When water enters the unit, it is directed into a sedimentation chamber that collects coarse sediments and debris. The stormwater then passes through a series of filters for treatment of hydrocarbons and organically bound metals.

#### Site Considerations

The Hydro-Kleen filtration system is designed to remove hydrocarbons, organically bound metals, PCBs, pesticides, VOCs, sulfides and other runoff contaminants from stormwater and industrial runoff. Specific potential applications include:

- Public streets
- Parking lots
- Vehicle service areas
- Industrial facility areas



Hydro-Kleen units are designed to treat the “first flush” and provide overflow bypass to prevent backup and flooding.

#### Installation

Installation of the Hydro-Kleen consists of clearing the work area, removing the existing grate, and confirming the grate dimensions with the filter and insert dimensions. The filtration unit is placed into the catch basin and the metal frame is caulked to prevent water bypass. The filter media is installed in the filter housing and the grate is replaced. The Hydro-Kleen system does not require pretreatment. It can, however, be used as a pretreatment device in conjunction with other BMP systems.

#### Maintenance

The unit must be maintained regularly in order to prevent saturation of filter media by contaminants and system clogging due to sedimentation and debris accumulation. It is recommended by the manufacturer that maintenance be conducted every 4 to 6 months. Inspection should be done regularly to determine if more or less frequent maintenance is needed depending on specific site characteristics.

Maintenance of the unit is accomplished by removing the cover, vacuuming the chamber with an 8" or smaller hose, and replacing the media filters. Maintenance takes only minutes and does not require professional training.

#### Aesthetics, Community and Safety

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2. Decision Criteria.

## Costs

The cost of the Hydro-Kleen system averages approximately \$2,000.00 per unit. Filter media replacements cost approximately \$400.00 including labor for change out.

## Performance and Verification Ranking

Verification Ranking: ●●●

Certified laboratory tests were conducted on the Hydro-Kleen filter media. The results show that hydrocarbons and other contaminants were reduced to non-detectable levels.

Studies:

- *Third Party Testing Results for the Hydro-Kleen System.* Greg S. Conrad, Ph.D.

## Installation Contact

No existing New Hampshire installations to date.

Location: Various installations

Contact: Dennis Ozsust  
Inland Waters Pollution Control  
2021 S. Schaefer Hwy.  
Detroit, MI 48217  
(313) 841-5807 extension 222

## Manufacturer

Company: Hydro Compliance Management, Inc.  
Address: 8741 Main St. Suite J  
Whitmore Lake, MI 48189  
Telephone: (800) 526-9629 or (734)449-8860  
Fax: (734) 449-9274  
Email: [hcm@hydrocompliance.com](mailto:hcm@hydrocompliance.com)  
Website: [www.hydrocompliance.com](http://www.hydrocompliance.com)

### 5.5.8. The Inceptor

#### General Description

The Inceptor suspends from any existing storm grate or curb inlet. The Inceptor frame is made from #304 stainless steel, and hangs from a two-point suspension system that creates a tipping effect during high flows. This design is to prevent stormwater backup and flooding. The patented PolyDak filter pillow slides inside the frame and will not leach or impact the water flow rate.



#### Site Considerations

The Inceptor is designed to capture oils, grease, PCBs, heavy metals attached to sediments, and debris. Specific potential applications include:

- Public streets
- Parking areas
- Vehicle service areas

The Inceptor comes in two standard dimensions 2' x 2' and 2' x 4', and can be custom manufactured to fit any dimension basin. The patented PolyDak filter pillow is made of melt spun thermoplastic synthetic material. The number of Inceptor units installed is dependent upon specific site conditions.

#### Installation

The installation process takes approximately five minutes per unit. Once the catch basin grate is removed, the suspension hardware is attached to the grate and the Inceptor is attached to the suspension hardware. The patented PolyDak filter pillow gets placed into the filter frame, and the grate is replaced. No pretreatment is required for the Inceptor.

#### Maintenance

Under normal conditions, the filter pillow needs annual replacement. Under extreme conditions, the filter pillow may require replacement twice per year. Inspection is recommended to determine the correct maintenance schedule for filter pillow replacement. The PolyDak filter pillow must be replaced annually. The Inceptor unit will last the lifetime of the catch basin.

#### Aesthetics, Community and Safety

Concerns regarding aesthetics, community support, and safety are highly site specific. For further information refer to Chapter 2, Decision Criteria.

#### Cost

Product costs include the stainless steel cage and the PolyDak filter pillow.

2' x 2'                \$625.00

2' x 4'                \$1100.00

Average annual cost after initial purchase:

2' x 2'                \$69.00

2' x 4'                \$89.00

## Performance and Verification Ranking

Verification Ranking: ●●●●

The Inceptor's patented PolyDak filter medium has been field tested by the Atlantic Coast Laboratories.

Studies:

- *Burlington County Soil and Conservation District Six Month Field Analysis.* Atlantic Coast Laboratories, Inc. December 2000.
- *Salvage Yard Six Month Field Analysis.* Atlantic Coast Laboratories, Inc. May 2001.
- *Mount Holly, New Jersey Six Month Field Analysis.* Mount Holly Municipal Utilities Authority. July 2001.

## Installation Contact

No existing New Hampshire installations to date.

Location: Mount Holly, NJ  
Date Installed: April 2001  
Contact: Teresa Rogan  
Municipal Utilities Authority  
Mount Holly, NJ 08060  
(609) 267-0015  
rogan@mhmuia.com

## Manufacturer

Company: Stormdrain Solutions, an RDI Company  
Address: 333 Beaumont Road  
Devon, PA 19333  
Telephone: (877) OUR-PIPE  
(877) 687-7473  
Fax: (610) 687-6327  
Website: www.stormdrains.com